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14-10-2004

OPS/PIT



Application No. 98 961 279.1 - 2124	Ref. 50148/OPS/PIT	Date 08.10.2004
Applicant Kemira Oyj		8.2.2005

Communication pursuant to Article 96(2) EPC

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

of 4 months

from the notification of this communication, this period being computed in accordance with Rules 78(2) and 83(2) and (4) EPC.

One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (Rule 36(1) EPC).

Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).



NAESLUND P O
Primary Examiner
for the Examining Division

Enclosure(s): 5 page/s reasons (Form 2906)
C.W. Reeve et al "Pulp Bleaching", Tappi Press, 1996, Chapter 1,
pages 12 and 13

**Bescheid/Protokoll (Anlage)**

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Communication/Minutes (Annex)

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Notification/Procès-verbal (Annexe)

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The examination is being carried out on the **following application documents**:

Description, Pages

1, 4-6, 8-12	as originally filed		
2, 3, 3A, 7, 7A	received on	25.10.2003	with letter of
	23.10.2003		

Claims, Numbers

1-8	received on	25.10.2003	with letter of
	23.10.2003		

The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US-A- 4 222 819 cited in the ISR and IPER

D2: US-A- 5 552 018 cited in the ISR and IPER

1. An amended claim set as well as arguments put forward in favour of patentability have been filed by the applicant. The examining division's comments/findings are as follow:

- 1.1 Subject-matter

The invention as presently claimed now refers to:

A method for bleaching of chemical pulp, wherein the pulp is treated in a plurality of different steps and wherein at least in one step a bleaching solution which contains a peracid is used, wherein the peracid is used in a post-bleaching which is the last step of the bleaching step carried out on delignified pulp having a kappa number of 4 or less, the post-bleaching taking place in the



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presence of one or several earth-alkali metal compounds and being carried out after the bleach plant steps in a pulp flow pipe, a storage tower and/or a paper machine (claim 1), and;

The use of a solution which contains a peracid and an earth-alkali metal for the post-bleaching of chemical pulp delignified to a kappa number of 4 or less, the post-bleaching being carried out after the bleach plant steps at a paper mill (claim 8).

1.2 Amendments

The examining division can see basis for the present claim 1 in original claims 1,3 and 9 together with the original description, page 4, lines 12-15.

For present claim 8 basis can be seen in original claim 11, 10, 3 and 1 together with the original description, page 4, lines 12-15.

Dependent claims 2-7 find basis in dependent claims 2,4-8 as originally filed.

Thus, as far as the amended claims are concerned, the requirements of Article 123(2) EPC would appear fulfilled.

1.3 Prior art and novelty

Both documents **D1** (see in particular page 2, line 60-col. 3, line 7; col. 3, lines 24-32; col. 6, lines 47-66; col. 7, lines 4-13; claims 1,4,10,25) and **D2** (see in particular col. 4, line 7-line 13; col. 6, line 44-col. 7, line 20) describe a method for bleaching of chemical pulp with peracid (e.g. peracetic acid) in the presence of an earth alkali metal (e.g. magnesium compound). It is further suggested in these documents that the peracid step can be a final step in the bleaching method, see in particular claim 4 in **D1** and example 4 in **D2**.

As to the wording "...being carried out after the bleach plant steps.." in present claims 1 and 8, it is not considered to add any distinguishing feature in view of **D1** or **D2**; the peracid step disclosed in these documents being as much preceded by bleach plant steps as the process according to present claims 1 and 8. It is thereby immaterial for what purposes the bleaching stage in question



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is there. If it is a bleaching stage, it is also a part of the bleaching plant. It can not be made any distinction in this sense.

Thus, the subject-matter of independent claims 1 and 8 in essence only differs over **D1** and **D2** respectively, in that the final bleaching is carried out on delignified pulp having a kappa number of 4 or less and that said bleaching takes place in a pulp flow pipe, a storage tower and/or a paper machine, or at a paper mill respectively.

As to the remaining documents known from the international search report they would seem further away from the claimed subject-matter than **D1** and **D2** and therefore do not need to be discussed more in detail here.

Accordingly, in the division's view claims 1 and 8 are novel and fulfil the requirements of Article 54 EPC.

1.4 Inventive step

- 1.4.1 After having studied the newly filed claims in view of the cited art the division however, arrives at the conclusion that claims 1 and 8 lacks an inventive step, for the following reasons:

The subject-matter of claims 1 and 8 differs as has been set out above from closest prior art, which could constitute either of **D1** or **D2**, in substance solely in that in the final bleaching with peracid and earth alkali metal the pulp has been delignified to a kappa number of 4 or less and that said bleaching takes place in a pulp flow pipe, a storage tower and/or a paper machine, or at a paper mill respectively.

The objective technical problem solved due to these differing features may therefore be regarded (deducible from the description, e.g. page 5, second paragraph) as in substance an improved bleaching process insofar as the brightness is increased without a loss of pulp strength.

However, the solution to this problem can not be seen as involving an inventive step. It is generally known in the field that the addition of compounds such as earth alkali metals (e.g. magnesium compounds) prevent the degradation of the



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cellulose at pulp bleaching (cf. annexed extract from C.W. Dence et al "Pulp Bleaching", fig. 2, page 13). This is also indicated in col. 6, lines 59 -col. 7, line 13 of **D1** by the reference to a "trial-and error"- technique and in **D2** in col. 4, 2nd paragraph in view of col. 1 line 33. Bearing this in mind it would have been evident for the skilled person who wants to improve brightness to add more earth alkali metal, such that a greater amount of bleaching chemicals, alternatively the use of more severe bleaching conditions becomes possible, and in that way improve brightness at equal viscosity; i.e. pulp strength. In fact such a optimization can not be regarded to have been more to the skilled person than a normal design procedure. In the alternative, the skilled person is also perfectly aware of, and in the position to start from, a slightly more easily bleached pulp and in that way arrive at a kappa of 4 or below before the final bleaching takes place. As to the particular location of the final bleaching no effects directly derivable from this can be seen from the application as filed. Moreover, it is submitted, it pertains to nothing but common knowledge in the field to locate the final bleaching where ever most suitable before the pulp is used, that is on the paper machine. On the way there the pulp passes pulp flow pipes, storage towers and finally also enters the paper machine before the bleaching has levelled off. Therefore the alternatives listed in claims 1 and 8 as regards where the final bleaching takes place can not be considered others than within the inherent teaching of these documents. Even more so since **D2** in col. 3, lines 30-33 in fact sets out that any type of suitable apparatus for the treatment of paper pulp would be suitable [for the bleaching].

- 1.4.2 The applicant argues that the post-bleaching of claims 1 and 8 differs from actual (real?) bleaching. Such an argument, however, can not be accepted for reasons already stated above, and also not because it is not readable on the claims in suit. In the division's view, as far as there is (still) a bleaching step in the pulp line, this step is in a sense a part of the bleaching plant.

Whilst the division can agree that in a later stage of pulp bleaching processes chromophoric groups could be rendered colourless, there is no sharp limit between delignification and bleaching. There is always a small degree of delignification taking place also in a final bleaching step (as can also be seen from example 3 referred to by the applicant; see in this context also annexed extract from C.W. Dence et al "Pulp Bleaching", in particular fig.1, page 12).



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For improved effects the applicant in substance refers to examples in the description part of the present application, where peracid and an earth alkali metal compound have been added and compares these with bleaches carried out without the addition of an earth alkali metal, with peracid alone. The division does not deny that such effects could be present. As has been set out above they are, however, only what can be expected from the known effect of the addition of earth alkali metals to such bleaching chemicals and that independently of the position in the bleach plant.

Thus, the subject-matter of claims 1 and 8 does not involve an inventive step and does not satisfy the criterion set forth in Articles 52(1) and 56 EPC.

2. It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable, an independent claim should be filed taking account of Rule 29(1) EPC. The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.